

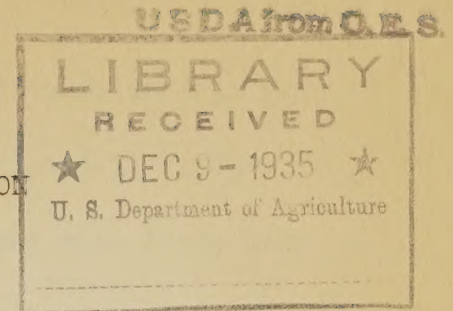
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ANIMAL HUSBANDRY DIVISION  
HAWAII AGRICULTURAL EXPERIMENT STATION  
HONOLULU, HAWAII



Under the joint supervision of the

UNIVERSITY OF HAWAII  
and the  
UNITED STATES DEPARTMENT OF AGRICULTURE

Progress Notes on Experiments and Other Items of Interest

No. 11

November, 1935

These progress notes on experimental work and other items of interest to livestock men in the Territory are issued from time to time by the Animal Husbandry Division. You are invited to suggest other lines of research that you deem important and to submit inquiries to the University.

PINEAPPLE BRAN-MOLASSES MIXTURES FOR FATTENING SWINE

by L. A. Henke and G. W. H. Goo

Purpose

Pineapple bran, properly supplemented, was fed to swine at the University of Hawaii Farm during the period 1922-28 with generally economical and fairly satisfactory results. # Recent advances in the cost of imported feeds made it desirable to further investigate pineapple bran as a feed for fattening swine, particularly when combined with cane molasses to further reduce the cost of the ration.

The Rations Used

In this series of Experiments I, II and III the same rations were used each time except that in Experiment I the pineapple bran was used in the coarse condition, and finding that pigs have a habit of chewing

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#Henke, L. A.--Pineapple Bran as a Feed for Livestock. Circular No. 2, Hawaii Agricultural Experiment Station--pp. 14-17 (1931)

ANIMAL HUSBANDRY DIVISION  
HAWAII ANIMAL HUSBANDRY EXPERIMENT STATION  
HONOLULU, HAWAII

Under the joint cooperation of the

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PROGRESS AND SUMMARY REPORT FOR THE YEAR 1935

By L. A. HARRIS and J. B. HARRIS

Purpose

Principal aim, research experimental, and for the purpose of the University of Hawaii. This report is prepared from the records of the Division and is intended to be a summary of the work of the Division and to be a guide to the work of the Division. It is intended to be a summary of the work of the Division and to be a guide to the work of the Division. It is intended to be a summary of the work of the Division and to be a guide to the work of the Division.

The National Year

In this report of Experiment I, II and III we have shown that the results of the experiments are in general in line with the results of the experiments. It is intended to be a summary of the work of the Division and to be a guide to the work of the Division. It is intended to be a summary of the work of the Division and to be a guide to the work of the Division.

By L. A. HARRIS and J. B. HARRIS  
HAWAII ANIMAL HUSBANDRY EXPERIMENT STATION--1935 (1936)

same but refusing to swallow some of the coarser particles in this form, the pineapple bran was first ground in Experiments II and III. Our regular Barley-Molasses ration, the value of which has been frequently demonstrated, was used as the control ration in each experiment. These rations, nutrients contained and cost at the time the experiments were conducted follow:

Barley-Molasses Ration (Control)

	Digestible		Cost of Ration	
	Crude Protein	Total nutrients	Per Ton	Cost
	lbs.	lbs.		
68 lbs. Barley	6.12	53.4	\$32.00	\$1.088
20 " Cane molasses	.20	11.9	10.00 <sup>#</sup>	0.100
8 " Fish Meal	3.21	4.7	35.00	0.140
2 " Linseed oil cake meal	0.63	1.5	45.00	0.045
1 lb. Salt	--	--	8.00	0.004
1 " Bone meal	--	--	50.00	0.025
100 lbs. Mixture	10.16	71.5		\$1.402

Pineapple bran-Molasses Ration (Experimental)

50 lbs. Pineapple bran	1.20	26.0	14.00	0.350
20 " Cane molasses	0.20	11.9	10.00 <sup>#</sup>	0.100
14 " Barley	1.26	11.1	32.00	0.224
12 " Fish meal	4.81	7.1	35.00	0.210
2 " Linseed oil cake meal	0.63	1.5	45.00	0.045
1 lb. Salt	--	--	8.00	0.004
1 " Bone meal	--	--	50.00	0.025
100 lbs. Mixture	8.10	57.6		\$ .958

Nutritive Ratio:

Barley-Molasses Ration (control)	1:6.037
Pineapple bran-Molasses Ration (experimental)	1:6.111

<sup>#</sup> Assumed cost--can often be purchased on plantations for \$5.00



## Plan of Experiments

The general plan was the same in each experiment. The available pigs for each experiment were divided into two lots as equal as possible in all respects. In making the allotment such factors as age, weight, condition, sex and ancestry were considered and balanced as equally as possible in all cases.

Self-feeders were used in all cases and besides the concentrate feed provided in them, each pig was given one pound of green feed daily. This green feed was generally homohono and alfalfa in rare cases when same was available.

The pigs were housed in partially covered concrete pens and weighed at two-week intervals during the progress of the experiment. The initial and final weights are the averages of three weights taken on three consecutive days at the beginning and end of each test.

Ample water was supplied daily in clean troughs.

The allotment and gain of each pig for each experiment follows:

Experiment I--76 days--March 14-May 28, 1935, inclusive

No.	From	Breed	Born	Sex	Initial	Final	Gain
	Sow				Weight	Weight	lbs.
					lbs.	lbs.	
Lot I --Check Mixture--Barley Molasses							
1	114	TXB	12/8/34	M	75.7	213.7	138.0
6	"	"	"	F	70.6	193.7	123.1
8	"	"	"	F	63.0	163.3	100.3
Average					69.8	190.2	120.4
Lot II--Pineapple Bran-Molasses Mixture							
2	114	TXB	12/8/34	M	72.3	133.7	61.4
3	"	"	"	F	71.0	141.3	70.3
7	"	"	"	F	70.0	123.3	53.3
Average					71.1	132.8	61.7

Table of Contents

The report is divided into two main parts. The first part is a general introduction to the subject, and the second part is a detailed description of the work done during the year. The first part is divided into three sections: a general introduction to the subject, a description of the work done during the year, and a summary of the results. The second part is divided into four sections: a description of the work done during the year, a description of the results, a description of the conclusions, and a description of the recommendations. The first section of the first part is a general introduction to the subject, and the second section is a description of the work done during the year. The first section of the second part is a description of the results, and the second section is a description of the conclusions. The third section of the second part is a description of the recommendations, and the fourth section is a description of the conclusions.

Table with 4 columns and 10 rows of data.

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24
25	26	27	28
29	30	31	32
33	34	35	36
37	38	39	40

#

Two pigs in this experiment, No. 32 and No. 35, became ruptured so this test was not continued to market weight.



Experiment III#--35 days--June 6-July 10, 1935, inclusive

No.	Sex	Sow	Born	Breed	Former Feed	Initial Weight lbs.	Final Weight lbs.	Gain lbs.
Lot I--Check--Barley-Molasses Mixture								
2	M	114B	12/8/34	TXB	Coarse Pine. Bran	134.6	193.0	58.4
33	M	112B	1/3/35	"	Control	129.0	192.3	63.3
36	F	"	"	"	Fine Pine. Bran	104.3	161.3	57.0
37	F	"	"	"	Control	139.6	196.3	56.7
Average						126.9	185.7	58.8
Lot II--Pineapple Bran-Molasses Mixture								
3	F	114B	12/8/34	TXB	Coarse Pine. Bran	142.0	189.0	47.0
7	F	"	"	"	"	113.6	160.3	41.7
31	M	112B	1/3/35	"	Control	110.0	144.3	34.3
44	F	"	"	"	"	138.3	174.6	36.3
Average						127.2	167.0	39.8

#

Most of these pigs had been used in Exp. I or II and the feed fed in the first experiment is shown.



The Condensed Results of These Three Experiments Follow:

	Experiment I 'Lot I' 'Lot II' 'Barley-'Pineapple' 'Molasses'bran-Molasses	Experiment I 'Lot I' 'Lot II' 'Barley-'Pineapple' 'Molasses'bran-Molasses	Experiment II 'Lot I' 'Lot II' 'Barley-'Pineapple' 'Molasses'bran-Molasses	Experiment III 'Lot I' 'Lot II' 'Barley-'Pineapple' 'Molasses'bran-Molasses	Av. of Exp. I, II & III 'Lots I' 'Lots II' 'Barley-'Pineapple' 'Molasses'bran-Molasses
Number of experimental days	76	76	35	35	49
Number of pigs in each lot	3	3	3	4	
Final average weight in pounds	190.2	132.8	91.5	167.0	130.4
Initial average weight in pounds	69.8	71.1	66.5	127.2	88.3
Average gain per pig in pounds	120.4	61.7	25.0	39.8	42.1
Average daily gain per pig in pounds	1.58	0.81	0.71	1.14	0.89
Total concentrate feed consumed, pounds	1453.	1027	427	915	790
Concentrate feed consumption per pig per day, pounds	6.37	4.50	4.07	6.53	5.03
Pounds concentrates required per pound gain	4.02	5.54	5.70	5.74	5.66
Total green roughage consumed, pounds	228	228	105	140	158
Total feed cost#	\$ 20.82	\$ 10.29	\$ 4.30	\$ 9.04	\$ 7.88
Feed cost per pound of gain	0.058	0.56	.057	.066	.057

# Green feed valued at \$4.00 per ton



General Observations and Summary

1. A fattening mixture for swine consisting of 82 percent locally produced feeds,--50 percent pineapple bran, 20 percent cane molasses, 12 percent fish meal (called pineapple bran-molasses) was compared with another mixture (called barley-molasses) which was only 28 percent locally produced,--20 percent cane molasses and 8 percent fish meal.
2. The ton costs of the pineapple bran-molasses and the barley-molasses rations were \$19.16 and \$28.04 respectively.
3. As an average of three experiments, each with two equal lots, pigs made an average daily gain of 0.89 and 1.55 pounds; consumed 5.03 and 6.56 pounds of concentrates per pig daily and required 5.66 and 4.21 pounds of the concentrate mixture to make a pound of gain for the pineapple bran-molasses and barley-molasses rations respectively.
4. From this it may be calculated that the pineapple bran-molasses ration was only 74.4 percent as effective in producing gains from the same quantity of feed, and was only 76.7 percent as palatable as measured by daily consumption as was the barley-molasses ration.
5. In two of the experiments the feed cost of a pound of gain based on prevailing prices was practically the same with both rations. In experiment III where pigs with an initial weight of 127 pounds were used the feed cost of a pound of gain was 6.6 cents and 5.7 cents for the barley-molasses and pineapple-bran-molasses rations respectively. This suggests that for best results the use of large quantities of pineapple bran in swine rations be deferred until the swine average around at least one hundred pounds each.
6. Both rations in these experiments contained 20 percent of cane molasses and its value in this amount has been demonstrated in previous experiments.



7. Because of its fiber content, swine do not seem to relish too much pineapple bran and it is possible that better results might have been secured had the pineapple bran been limited to about 25 percent instead of 50 percent as in these experiments. We observed the pigs chewing the pineapple bran, probably to get its sugar content, but refusing to swallow some of it. In experiment I we observed that about 8 percent of the pineapple bran fed was refused after the pigs had first chewed same. In experiments II and III the pineapple bran was more finely ground, making it difficult for the pigs to pick out the pineapple bran particles. However, results in the last two experiments were not notably different from experiment I where the coarse bran was fed except that more feed was consumed and better gains resulted but we infer this was due to the fact that pigs having an initial weight of 127 pounds were used in the last experiment.

8. Under the conditions of these experiments the pineapple bran-molasses mixture was worth only about 75 percent as much as the barley-molasses mixture for fattening swine and at prices prevailing at this time the former ration cost 68 percent as much as the latter, making the pineapple bran-molasses ration slightly more economical based on the feed cost of producing gains. However, slower gains require that the pigs be kept longer which increases the labor, housing and other costs of pork production, hence at these prices it would appear that the barley-molasses mixture was the better ration, particularly for pigs having an initial weight of around 70 pounds. The best practice would appear to be to start the pigs on the barley-molasses ration and then gradually change them to the pineapple bran-molasses ration when they reach the 125-pound weight for these experiments indicate that if pineapple bran is used for swine feeding the greatest economy results when same is fed to larger swine.

7. However, if the film content, which is not able to retain the same plan-  
nity even and it is probable that certain results might have been secured had  
the film been used. Limited to about 15 percent instead of 50 percent as  
in these experiments. He observed the film showing the same results, possibly  
to get a better content, but a failure to obtain a better result of it. In experiment 1  
he observed that about 8 percent of the film was retained after  
the film had been exposed. In experiment 2 he observed that the film was  
not very finely exposed, making it difficult for him to pick out the silver  
grain particles. However, results in the first two experiments were not  
nearly different from experiment 1. When the silver grain was too large, that  
more film was consumed and better grain retained but we later find that the

the fact that when having an initial weight of 100 grains was used in the  
last experiment.

8. Under the conditions of these experiments the film was exposed to  
light and with only about 15 percent of the film retained after exposure  
the film was used and it was observed that the film was retained about  
15 percent as much as the film, making the film's preservation ratio  
slightly more economical than in the first two experiments. However,  
these results indicate that the film is kept longer when exposed to light,  
making the film more economical, since of these films it would  
appear that the film's preservation ratio was the better result, particularly  
the film being an initial weight of about 10 grains. The best results would  
appear to be to expose the film on the film's preservation ratio and then gradually  
expose it to the film's preservation ratio as they reach the 100-point  
mark for the film's preservation ratio. It is probable that the film is used for  
making the film's preservation ratio when it is too large, when